Watershed Management Area Evaluation Criteria Matrix:

To illustrate the application of the evaluation criteria matrix, the Waianae Mountain Range was used as an example. The Waianae mountain range encompasses 8 Commission on Water Resource Management (CWRM), water management areas and within each of these areas there are smaller 19 watershed areas delineating the drainage basins. Only aquifer and stream criteria were used because the data was readily available in the BWS Oahu Water Management Plan and the CWRM Multi-Attribute Prioritization of Streams reports of 1998. Based on the percent of sustainable yield permitted and the streams resource ranking, the Makaha watershed was identified as most significant and worthy of additional watershed protection projects that would enhance and restore this watershed.

The Waianae/Kaupuni and the Honouliuli watershed were also highly ranked. This exercise identifies the most significant watershed within the Waianae mountain range that deserves watershed protection, management and restoration.

The BWS is involved in an agency and community partnership for the Makaha Valley watershed. Working with the Mohala I Ka Wai and the Waianae High School, baseline monitoring is being conducted for rainfall, stream flow and groundwater head levels. At the end of 2001, the BWS will turn off the Makaha II, III and IV Wells and undertake a 5-year pilot study to evaluate if the watershed improves in terms of stream flow, water quality and the health of the forests. Other enhancement projects such as feral animal control and fencing are also being proposed.

The potential reduction of approximately 0.5 mgd of average day supply currently produced from these wells will be replaced initially from greater import from the Ewa district. Eventually, BWS intends to develop recycled water from the Waianae wastewater treatment plant to replace approximately 2 to 3 mgd of potable irrigation water. The released potable water supply capacity will be resold and indirectly pay for the recycled water treatment plant and nonpotable distribution system. In this way, the BWS integrates watershed protection and restoration with reclamation. The BWS has a public trust responsibility to manage and protect Oahu's water resources and by integrating new alternative water supply technologies, watersheds will be preserved for future generations.

APPENDIX 10

Watershed Management Area Evaluation Criteria Matrix

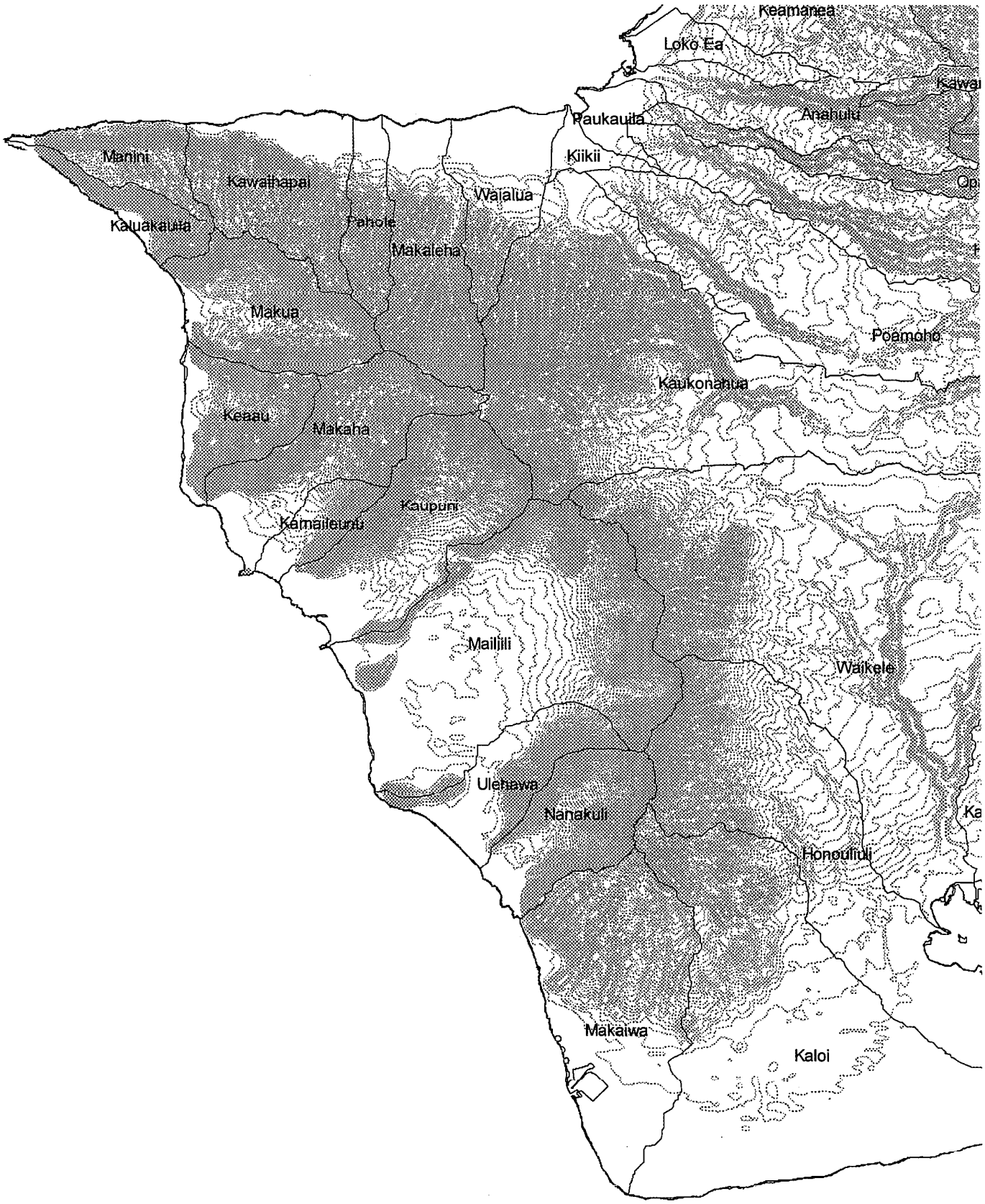
	Mountain Partnership Area	Waianae Mountain Partnership Area							
	Water Districts	North (Portion), Wahiawa (Portion), Ewa & Waianae							
	Aquifer Systems	Mokuleia	Wahiawa	Ewa-Kunia	Nanakuli	Lualualei	Waianae	Makaha	Keaau
	Ahupua`a								
	Watershed Area	Manini Kawaihapai Pahole Makaleha Waialua	Kaukonahua (Por)	Waikele(por) Honouliuli Kaloi, Makaiwa	Nanakuli	Ulehawa Mailiili	Kaupuni	Kamaileunu Makaha	Keaau Makua Kaluakauila
Watershed Signficance Criteria	**Criteria Weighting**								
Aquifer Criteria & Measures	5								
Sustainable yield in mgd		12	23	16	1	3	3	4	4
State Permitted Use mgd December 2000		6.3	20.7	14.5	0	0.3	3	4	0.05
Pumpage mgd 1994		2	9.7	11.5	0	0.3	2.8	2.2	0.05
Percent sustainable yield permitted		53%	90%	91%	0%	10%	100%	100%	1%
Presence of contaminants in groundwater wells			TCE					Radon	No data
Score:			3	2			1	1	
Ref. (BWS OWMP)									
Streams Criteria	5								
Stream Name		Makaleha	Kaukonahua	Honouliuli	Nanakuli	Ulehawa / Mailiili	Kaupuni	Makaha	Makua
Perennial / Intermittent		Intermittent	Perennial	Partial	Intermittent	Int/Int	Partial	Partial	Intermittent
Diversions		No	Yes	Yes	No	No/No	No	No	No
Channelization		No	No	No	Yes	Yes/Yes	Yes	Yes	No
Aquatic Resource		No Data	No Data	No Data	No Data	No Data	No Data	7.5	No Data
Riparian Resource		20	No Data	12.4	5.7	5.7/6.7	6.7	9.5	8.6
Cultural Resource		1.7	No Data	11.7	15	1.7/1.7	12.5	20	1.7
Recreational Resource		5.5	No Data	1.8	12.7	10.9/10.9	16.4	12.7	1.8
Special Areas (wild&scenic,refuge, reserve,waterfalls etc)		3.6	No Data	9.1	0	0/0	10.9	0	0
Level of gauging and monitoring		No	Yes	Yes	No	No/No	Yes	Yes	No
Score:		30.8		35.0	33.4	18.3/19.2	46.4	49.8	12.1
Ref. (CWRM MAPS)									
Watershed Ranking				3			2	1	

Table: Evaluation Criteria and Associated Weighting toward Water Resources

Evaluation Criteria	Water Resource Weighting	Justification
Aquifer Systems	5	High influence on water resources
Streams	5	High influence on water resources
Native Plants	2	Recharge occurs in forested watersheds whether native or exotic
Invasive Plants	4	Miconia infestation leads to erosion
Feral Animals	4	Over-population leads to erosion
Erosion	4	Recharge is minimal and runoff is polluted
Historic and Cultural Value	2	Limited significance to water supply
Land Use Designation	3	Conservation Districts have higher weighting
Fire Rating	3	Dry areas susceptible to fires leads to erosion
Partnerships and Community Involvement programs	5	If partnerships exist in significant watersheds

The table is not a complete analysis but is intended to illustrate a prioritization methodology

The weighting factors are based on a 5-point maximum scale for each criterion (5- Very Significant, 4- Significant, 3- Average Significance, 2- Below Average Significance, and 1- Very little Significance). Each watershed's ranking is then


Keamanea
Loko Ea
Paukauila
Anahulu
Manini
Kiikii
Kawaihapai
Waialua
Kaluakauila
Pahole
Makaleha
Makua
Poamoho
Kaukonahua
Keaau
Makaha
Kaupuni
Kamaileunu
Mailiili
Waikele
Ulehawa
Nanakuli
Honouliuli
Makaiwa
Kaloi